Contents lists available at ScienceDirect

Teaching and Teacher Education

Teaching during a Pandemic: United States Teachers' Self-Efficacy During COVID-19

Tim Pressley[*], Cheyeon Ha

Christopher Newport University, USA

HIGHLIGHTS

- COVID and virtual teaching impacting average teacher efficacy scores for instruction and engagement.
- Teachers providing virtual instruction with lowest teacher efficacy.
- No difference in teacher efficacy based on experience, location, previous success, and level.

ARTICLE INFO

ABSTRACT

The COVID-19 pandemic had significant implications on schools during 2020, with districts moving to all virtual instruction during the spring and facing the debate of how to return safely to school in the fall. With these decisions, teachers, schools, and districts faced many challenges when providing face-to-face, hybrid, and virtual teaching. The purpose of this study was to explore how the new teaching approaches and requirements have impacted teachers' self-efficacy, specifically instructional and engagement efficacy. The current study included 361 participants from across the United States who completed the Teacher Sense of Efficacy Scale (TSES) subsections of instruction and engagement. The results found the average teacher self-efficacy scores for both instruction and engagement were lower than TSES scores of instruction and engagement in previous studies. The results also indicated teachers who are teaching virtually had the lowest efficacy scores compared to teachers teaching in a hybrid or all in-person model. However, the results suggested no difference in efficacy score based on years of teaching experience, teacher location, previous accolades, or instruction level.

© 2021 Elsevier Ltd. All rights reserved.

The COVID-19 pandemic had significant implications on schools during 2020, with districts moving to all virtual instruction during the spring and facing the debate of how to return safely to school in the fall. School districts across the country took different approaches to return to school for the 2020–2021 school year, with some districts returning with face-to-face instruction with students socially distanced, while other districts returned with hybrid teaching (alternating face-to-face and virtual instruction), and 100% virtual instruction. No matter the instructional approach, teachers returned to the classroom facing drastically different environments, routines, and instructional approaches. These requirements included mandates from districts to learn new virtual instruction pedagogy and platforms and provide instruction to all

students no matter the instructional approach. With all these changes and challenges teachers faced, teachers were still responsible for providing instruction through engaging lessons just as they have in past years, but teachers now had to alter this instruction due to COVID-19 policies. Up to this point, researchers have begun to study the impact of the COVID-19 pandemic on teachers (Pressley, 2021; Hoang et al., 2020; Song, Wu, & Zhi, 2020; Vu et al., 2020), but this article is the first to analyze and explore the potential impact of teachers in the United States during the COVID-19 pandemic on teacher self-efficacy.

During the COVID-19 pandemic, schools moved instruction online across the United States for spring 2020 and faced the decision of how to provide instruction to students in the fall. With these decisions, teachers, schools, and districts faced many challenges when providing face-to-face, hybrid, and virtual teaching. These challenges included technology issues for students who may not have internet access or access to proper technology (Marshall

* Corresponding author. Christopher Newport University, 1 Avenue of the Arts, Newport News, VA, 23606, USA.
 E-mail address: timothy.pressley@cnu.edu (T. Pressley).

et al., 2020; Simmons, 2020), forced teachers to take on new approaches to planning and instruction (Honigsfeld & Nordmeyer, 2020), and required teachers to learn new technology platforms (Wiggins, 2020). Furthermore, teachers faced high levels of stress due to parent communication, administrative support, and anxiety (Pressley, 2021).

With all the new challenges and COVID-19 policies teachers faced, it is crucial to understand their impact on teachers. Thus, the purpose of this study was to explore how the new teaching approaches and requirements have impacted teachers' self-efficacy, specifically instructional and engagement efficacy. The researchers asked the following research questions to explore teachers' instructional and engagement efficacy during COVID-19 instruction. 1) What are teachers' instructional and engagement efficacy scores while teaching the COVID 19 pandemic? 2) Are there any differences in teachers' instructional and engagement efficacy scores based on instructional level (elementary or secondary)? 3) Are there any differences in teachers' instructional and engagement efficacy scores based on instruction (all virtual, hybrid, or all face-to-face)? 4) Are there any differences in teachers' instructional and engagement efficacy scores based on teachers who were previously named teacher of the year?

1. Social Cognitive Theory

Bandura's Social Cognitive Theory (1986) states several capabilities drive a person's motivations. These capabilities include symbolizing, forethought, vicarious, self-regulatory, and self-reflective. Through the environment, behaviors, and personal factors, these capabilities play a role in a person's views on their ability to complete a particular task. Specifically, Bandura refers to a person's views on their ability to achieve a particular outcome as self-efficacy (Bandura, 1997). Information regarding a person's efficacy comes from previous success in the specific domain, observing others through vicarious experiences, verbal persuasion from others, and a person's physiological state (Bandura, 1986, 1997). When it comes to performance, a person's perceived self-efficacy may impact a person's competence and performance in that domain (Bandura, 1986, 1997). Within the context of teaching, teacher self-efficacy focuses on "the teacher's belief in his or her capability to organize and execute a course of action required to accomplish a specific teaching task in a particular context" (Tschannen-Moran, Hoy, & Hoy, 1998, p. 233).

1.1. Teacher self-efficacy

Teacher self-efficacy is important for schools to support as previous studies have found teacher self-efficacy negatively associated with teacher burnout and positively associated with commitment to teaching (Pas, Bradshaw, & Hershfeldt, 2012; Skaalvik & Skaalvik, 2007; Zee & Koomen, 2016). Furthermore, teachers with higher self-efficacy are more open to new teaching methods and more persistent when facing challenges (Pressley, Roehrig, & Turner, 2018; Tschannen-Moran et al., 1998). Additionally, previous research has found teacher self-efficacy impacts student outcomes (Klassen et al., 2011) and instructional quality (Kunsting et al., 2016). When it comes to student academic outcomes, teachers with high teacher self-efficacy often have more success because they are more comfortable scaffolding students through mistakes, building relationships with students (Hajovsky et al., 2020), and increasing student engagement within the classroom (Good & Brophy, 2003; Tschannen-Moran et al., 1998). Additionally, teachers with high self-efficacy are more likely to have high expectations of student academic achievement (Tournaki & Podell, 2005; Fackler & Malmberg, 2016) and have more success

at raising student academic achievement (Anderson et al., 1988; Midgley et al., 1989).

Along with the four main influences of self-efficacy (mastery experiences, vicarious experiences, verbal persuasion, and affective state; Bandura, 1997; Tschannen-Moran et al., 1998), Fackler and Malmberg (2016) found the school environments and individual characteristics of teachers may also influence a teacher's self-efficacy. At the school level, a school's physical location does not impact a teacher's self-efficacy; however, the school environment does play a role (Tschannen-Moran & Hoy, 2007). School environments that have teachers with high, attainable goals and create a serious learning environment tend to have higher teacher self-efficacy (Hoy & Woolfolk, 1993; Wolters & Daugherty, 2007). Within the environment, the principal and school community may impact teaching efficacy through resources of vicarious learning and verbal persuasion (Fackler & Malmberg, 2016). The relationships teachers form within the school environment may impact teacher self-efficacy, with teachers who develop stronger relationships with other teachers tend to have higher efficacy than teachers with many weak relationships (Siciliano, 2016).

With all the changes teachers faced during COVID-19, one extensive study found the teaching environment played a critical role in maintaining teachers' sense of success (Kraft et al., 2020). Though the researchers did not specifically focus on teacher self-efficacy, the focus of the study was on teacher sense of success and the variables that impacted their feeling of success. The researchers found through pre/post surveys that teachers struggled with balance between teaching and personal lives, learning new technology, and disengaged students. Kraft et al. (2020) found teachers with school and district leaders who communicated clearly and provided fair expectations had less dip in their sense of success. Additionally, teachers who received professional development that supported virtual instruction and had opportunities to collaborate with other teachers had a stronger sense of success (Kraft et al., 2020).

To develop an environment that promotes teacher self-efficacy, principals should provide teachers with strategies and feedback for their teaching (Hoy & Woolfolk, 1993), opportunities to grow through professional development (Fackler & Malmberg, 2016), and opportunities to work with other teachers in the building (Dembo & Gibson, 1985; Siciliano, 2016). Additionally, school environments that provide support to teachers through coaching or mentoring often see an increase in teacher self-efficacy (O'Connor & Korr, 1996; Ross & Bruce, 2007). Beyond the building administrators and teachers, Stipek (2012) found support from parents as an important school environment factor on a teacher's self-efficacy. With many teachers teaching in a hybrid and virtual format, parents have become a larger presence in the learning environment. Recently, Pressley (2021) found communicating with parents is a significant predictor of teacher burnout.

At the individual level, previous studies have found several variables that influenced teacher self-efficacy, including teacher perceptions of student engagement (Ross et al. 1996), graduate degrees, the time of year (Anderson et al., 1988), professional development (Yoo, 2016), and previous teaching experiences (Hoy & Woolfolk, 1993; Wolters & Daugherty, 2007). Specifically, the time of the year can change teacher self-efficacy, with teachers feeling higher efficacy at the end of the school year than the beginning of the year, especially in the elementary years due to mastery experiences gained throughout the year (Anderson et al., 1988). Additionally, Hoy & Wollfok (1993) found teachers with more teaching experience had higher teacher self-efficacy because they had more mastery experiences. Mastery experiences can often be a difference in teacher self-efficacy, especially when analyzing novice teachers' self-efficacy as Tschannen-Moran and Hoy (2007)

found differences in instructional efficacy; however, there was no difference in engagement efficacy.

To support teacher self-efficacy, several studies have found professional development that includes mastery experiences and verbal persuasion aspects have led to an increase in teacher self-efficacy (Morris & Usher, 2011; Yoo, 2016). Mastery experience, such as success in the classroom and positive feedback from observations, also can increase teacher self-efficacy (Bandura, 1997; Tschannen-Moran et al., 1998). However, even with mastery experiences, when teachers faced new challenges, it led teachers to reassess their teaching and negatively affect their teacher self-efficacy (Tschannen-Moran et al., 1998). Additionally, high levels of stress and anxiety can influence teacher self-efficacy at the individual level, leading to decreased teacher self-efficacy (Bandura, 1997). As teachers returned to teaching during fall 2020, teachers faced a large amount of stress and anxiety (Pressley, 2021). Though there are limited studies on the impact of COVID-19 and teachers, stress may be an influential factor on teacher self-efficacy during COVID-19.

The current study utilized Tschannen-Moran and Hoy (2001) Teacher Sense of Efficacy Scale (TSES) to measure teachers' instructional and engagement efficacy. To gain perspective on the impact of COVID-19 on teacher self-efficacy scores, we sought previous studies that also used the TSES. Specifically, Wolters and Daugherty (2007) found teachers instructional efficacy scores averaged 7.36 and engagement averaged 6.86 across 1000 teachers. They also saw slight differences when comparing school levels, with elementary having the highest instruction and engagement efficacy scores than middle and high school teachers. When focusing on years of experience, Wolters and Daugherty (2007) found instruction scores ranged from 6.88 to 7.59, with more experienced teachers reporting higher instruction efficacy. Engagement efficacy ranged from 6.86 to 6.95, with teachers with 6−10 years of experience reporting the highest efficacy score. It is important to note that Wolters and Daugherty (2007) evaluated teacher self-efficacy of teachers in one school district in Texas at a general level rather than a specific context or multiple districts, states, or countries. Additionally, the teachers included in the study had a variety of differences in teaching environments (e.g., number of students, student characteristics', and subject taught), which may influence teacher self-efficacy differently at each level.

Similarly, Yoo (2016) also used the TSES and found instructional efficacy improved from 7.46 to 8.08, while engagement efficacy improved from 7.08 to 7.90 after teachers attended professional development opportunities across 148 teachers. Of the 148 teachers, Yoo's sample included kindergarten through high school teachers, with comparable group sizes. Though Yoo (2016) incorporated a pre/post test design, the professional development program was 100% online rather than in person and a majority of the participants were working on their master's degrees at the same time, which may have also influenced their self-efficacy. Readers should also take caution in making causal claims regarding the use of online professional development because of the small sample size within the study.

Though the previous research has provided impactful insights into teacher self-efficacy and provides insight for previous TSES scores (Wolters & Daugherty, 2007; Yoo, 2016), none of the previous studies studied teachers during a global pandemic. In 2020, teachers faced challenges that no district, school, or teacher preparation program had prepared for previously. Though the current study is one of the first studies to explore teacher self-efficacy, several studies have explored teacher self-efficacy during the COVID-19 pandemic in Canada and across Europe.

1.2. Teacher self-efficacy during COVID-19

There is still limited research on the impact of COVID-19 on teacher's efficacy, however, several recent articles have shed light on the issue. There is still limited research on teacher efficacy during COVID-19 in the United States (Pressley, 2021), however, several articles have focused on teachers in Canada and Europe at the beginning of the COVID-19 pandemic (Dolighan & Owen, 2021; Pellerone, 2021; Rabaglietti et al., 2021). Specifically, Dolighan and Owen (2021) sampled 132 Canadian, secondary, Catholic school teachers during a time that all teachers were teaching remotely. The results found teachers who had completed additional courses for online instruction or had completed district provided learning platform prior to transitioning to all virtual instruction had a higher teacher efficacy (Dolighan & Owen, 2021). Similarly, Rabaglietti et al. (2021) surveyed 366 European teachers about stress, general self-efficacy, and distance learning. The results found self-efficacy decreased when teachers faced more difficulty with distance learning. Additionally, self-efficacy acted as a partial mediator between teacher stress and difficulty with distance learning (Rabaglietti et al., 2021).

One particular study of note also used the TSES subscales of engagement and instruction to measure teacher self-efficacy during the pandemic (Pellerone, 2021). Specifically, Pellerone sampled 374 Italian teachers focusing on teacher self-efficacy and burnout. Pellerone (2021) found the student make up influenced both engagement and instructional efficacy. Class make-up included number of students in the class, the presence of students with disabilities, and grade level (Pellerone, 2021). Additionally, Pellerone found teacher self-efficacy was a mediator between emotional competence and personal accomplishment.

Similar to the current study, the previous studies on teacher efficacy during COVID-19 have used convenance samples and cross-sectional measurements which limits the generalizability of each study individually. However, each study provided insight into how teachers felt during the COVID-19 pandemic as they were asked to continue providing instruction to students. Furthermore, schools, states, and countries have responded differently to the pandemic, which may impact teachers' efficacy and the previous studies provided exploratory findings for different countries.

1.3. The current study

Based on the previous literature and the reports presented on teaching during COVID-19, we predicted that new teaching demands and approaches would impact teacher self-efficacy scores in instruction and engagement during the 2020−2021 school year. Specifically, we felt there would be differences between the instructional types. Due to the newness and challenges that come with teaching virtual (e.g., building relationships with students, limitations of instructional techniques, and use of manipulatives), we believed teachers who were teaching on an all-virtual approach would have lower efficacy scores compared to hybrid or face-to-face teachers (Dolighan & Owen, 2021; Marshall et al., 2020; Honigsfeld & Nordmeyer, 2020). We also predicted that teachers who taught in a suburban setting would have significantly higher efficacy scores than teachers teaching in rural or urban settings due to internet and technology access, which may lead to more difficulties with distance learning (Rabaglietti et al., 2021; Simmons, 2020). Lastly, we predicted that teachers who had received previous accolades teacher of the Year (TOY)) would have higher efficacy due to past teaching success (Bandura, 1986, 1997; Wolters & Daugherty, 2007). We decided to use previous TOY to group teachers who have previous success in the classroom to identify potential differences in teacher self-efficacy (Palmer et al., 2005).

2. Method

This exploratory study focused on teachers' instruction and engagement efficacies during the 2020−2021 school year, which saw many school districts take on alternate approaches to instruction due to the COVID-19 pandemic. Specifically, we used a survey design to reach a sizeable sample of teachers to gather insight on the K-12 teacher population and describe and compare teachers based on characteristics (e.g., instruction, location, and accolades; Visser et al., 2000).

2.1. Procedures and sampling

The researchers used convenience and snowball sampling to recruit teachers to complete an electronic survey during the first two weeks of October 2020. The research team selected this time during the school year as most teachers had returned to teaching in August and had experienced the new teaching requirements for at least four weeks. This would allow teachers time to adjust to new instructional approaches and requirements. The research team posted the survey to several social media groups for teachers and emailed the survey to recent graduates of a teacher preparation program. After completing the survey, the debriefing statement encouraged all teachers to pass the survey along to other teachers.

2.2. Participants

The current study included 361 participants from across the United States. To participate, the participants had to currently teach in an elementary, middle, or high school in the United States. Teacher experience ranged from the 1st-38th year of teaching, with an average of 13.85 years of teaching experience. Teachers taught at a range of schools, with 68 identifying their current school as Urban, 219 suburban, and 74 rural. For the teaching approach, the sample included 238 teachers teaching all virtually, 105 teaching in a hybrid model with some face-to-face and others virtual, and 18 teachers teaching all in person. As for the teaching level, the sample included 317 elementary teachers and 44 secondary teachers. Lastly, the participants included 102 teachers who had previously won teacher of the year (TOY) and 259 teachers who had not won TOY.

2.3. Survey

The survey collected demographic information on teachers such as school location, years of teaching experience, grade level, subject, and feelings returning to the classroom during COVID-19. To measure teacher self-efficacy, we selected the subscales of efficacy in student engagement ($\alpha = 0.81$) and efficacy in instructional strategies ($\alpha = 0.86$) from The Teacher Sense of Efficacy Scale short form (TSES; Tschannen-Moran & Hoy, 2001). Because of the differing nature of teaching during the fall of 2020, we ran a reliability check of the two TSES scales for the current sample finding efficacy in student engagement ($\alpha = 0.88$) and efficacy in instructional strategies ($\alpha = 0.88$) respectively.

For using the TSES survey, we tested measurement invariances using the confirmatory factor analysis (CFA). In the unconstrained model, the model fit indices showed all acceptable levels [TLI = 0.932, CFI = 0.959, RMSEA = 0.067]. Moreover, we ran the chi-square different tests; the result of the changed chi-square test with the measurement weights model was not significant ($p = .347$) among the three different instructional groups. Also, the chi-square test between the structural covariance model and the unconstrained model was not significant ($p = .712$) in three types of instructions. Therefore, we confirmed that there were no statistical differences in factor loadings in three different instructional groups.

We selected these subscales because we thought these two constructs would be most prevalent for all teachers teaching face-to-face, hybrid, and virtually. Additionally, we believed the construct of classroom management, though important, would differ for each instructional type; thus, the TSES classroom management instrument may not apply to every teacher during fall 2020. The TSES uses a 9-point scale that asks teachers to rate from "nothing" to "a great deal." Example questions include, "How much can you do to motivate students who show low interest in school work?" and "How well can you implement alternative strategies in your classroom?"

3. Results

The average instructional efficacy score for the sample was 5.58 ($SD = 1.72$), and the average engagement efficacy score for the sample was 5.15 ($SD = 1.44$; See Table 1 for descriptive statistics). To determine if instructional and engagement efficacy were associated with years of teaching experience, we ran a Pearson's bivariate correlation. The results suggested no association between instructional efficacy and years of teaching experience ($r = 0.055$, $p = .299$) and no association between engagement efficacy and years of teaching experience ($r = 0.033$, $p = .532$).

3.1. Efficacy and instruction level

To compare teachers' instructional efficacy based on the instructional level (elementary or secondary), we used an independent-sample *t*-test. Elementary teachers had a slightly lower instructional efficacy ($M = 5.56$, $SD = 1.70$, $n = 317$) than secondary teachers ($M = 5.74$, $SD = 1.84$, $n = 44$). However, the results indicated no difference in instructional efficacy $t(359) = -0.66$, $p = .509$, between the two levels (See Table 2).

To compare teachers' engagement efficacy based on the instructional level (elementary or secondary), we used an independent-sample *t*-test. Elementary teachers had a slightly higher engagement efficacy ($M = 5.18$, $SD = 1.44$, $n = 317$) than secondary teachers ($M = 4.99$, $SD = 1.42$, $n = 44$). However, the results indicated no difference in engagement efficacy $t(359) = 0.81$, $p = .417$, between the two levels (See Table 2).

Table 1
Descriptive statistics.

	N	Instructional Efficacy		Engagement Efficacy	
		M	SD	M	SD
Overall	361	5.58	1.72	5.15	1.44
Instructional Level					
Elementary	317	5.56	1.70	5.18	1.44
Secondary	44	5.74	1.84	4.99	1.42
Type of Instruction					
All in-person	18	6.26	1.63	5.96	1.58
Hybrid	105	5.81	1.69	5.11	1.44
All virtual	238	5.42	1.72	5.11	1.41
Teacher Accolades					
Former TOY	102	5.47	1.75	5.07	1.56
Not Former TOY	259	5.62	1.71	5.19	1.39
Location					
Rural	74	5.41	1.77	5.14	1.51
Suburban	219	5.65	1.65	5.16	1.40
Urban	68	5.51	1.91	5.16	1.52

Table 2
Teacher instruction level.

		Levene's Test for Equality of Variances		*t*-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Instruction Efficacy	Equal variances assumed	.171	.679	-.661	359	.509	-.182	.276	-.726	.361
	Equal variances not assumed			-.621	53.624	.537	-.182	.294	-.772	.407
Engagement Efficacy	Equal variances assumed	.001	.981	.813	359	.417	.188	.231	-.267	.643
	Equal variances not assumed			.819	55.896	.416	.188	.229	-.271	.648

3.2. Efficacy and type of instruction

To compare teachers' instructional efficacy based on the type of instruction provided at the beginning of the 2020−2021 school year (all virtual, hybrid, or face-to-face), we used a one-way ANOVA. The results suggest a significant difference between the three instructional approaches $F(2, 358) = 4.43$, $p = .034$ (See Table 3) with teachers teaching all in-person having the highest instructional efficacy ($M = 6.26$, $SD = 1.63$; $n = 18$), followed by hybrid ($M = 5.81$, $SD = 1.70$; $n = 105$), and all virtual with the lowest average of instructional efficacy ($M = 5.42$, $SD = 1.72$; $n = 238$).

To compare teachers' engagement efficacy based on the type of instruction provided at the beginning of the 2020−2021 school year (all virtual, hybrid, or face-to-face), we used a one-way ANOVA. The results suggest a significant difference between the three instructional approaches $F(2, 358) = 3.01$, $p = .05$ (See Table 3) with teachers teaching all in-person having the highest engagement efficacy ($M = 5.96$, $SD = 1.58$; $n = 18$), followed by hybrid ($M = 5.11$, $SD = 1.44$; $n = 105$), and all virtual with the same average of engagement efficacy ($M = 5.11$, $SD = 1.41$; $n = 238$).

3.3. Efficacy and teacher accolades

To compare teachers' instructional efficacy based on the previous accolades (TOY or no accolades), we used an independent-sample *t*-test. Former TOY recipients had a slightly lower efficacy ($M = 5.47$, $SD = 1.75$, $n = 102$) than teachers who were not former TOY recipients ($M = 5.62$, $SD = 1.71$, $n = 259$). However, the results indicated no significant difference in instructional efficacy $t(359) = 0.731$, $p = .466$, between the two groups (See Table 4).

To compare teachers' engagement efficacy based on the previous accolades (TOY or no accolades), we used an independent-sample *t*-test. Former TOY recipients had a slightly lower efficacy ($M = 5.07$, $SD = 1.56$, $n = 102$) than teachers who were not former TOY recipients ($M = 5.19$, $SD = 1.39$, $n = 259$). However, the results indicated no significant difference in engagement efficacy $t(359) = 0.71$, $p = .481$, between the two groups (See Table 4).

3.4. Efficacy and school location

To compare teachers' instructional efficacy based on the location

of the school year (Rural, Suburban, or Urban), we used a one-way ANOVA. The results suggest no significant difference in the instructional efficacy based on location of the school $F(2,359) = 0.58$, $p = .561$ (See Table 5) with teachers who teach at rural schools ($M = 5.41$, $SD = 1.77$; $n = 74$), teachers at suburban schools ($M = 5.65$, $SD = 1.66$; $n = 219$), and teachers at urban schools ($M = 5.51$, $SD = 1.91$; $n = 68$).

To compare teachers' engagement efficacy based on the location of the school year (Rural, Suburban, or Urban), we used a one-way ANOVA. The results suggest no significant difference in the engagement efficacy based on the location of the school $F(2, 359) = 0.01$, $p = .991$(See Table 5) with teachers who teach at rural schools ($M = 5.14$, $SD = 1.51$; $n = 74$), teachers at suburban schools ($M = 5.16$, $SD = 1.40$; $n = 219$), and teachers at urban schools ($M = 5.16$, $SD = 1.52$; $n = 68$).

3.5. Summary of results

Based on the previous literature and the reports presented on teaching during COVID-19, we predicted that new teaching demands and approaches would impact teacher self-efficacy scores in instruction and engagement during the 2020−2021 school year. Compared to previous studies on teacher self-efficacy, the current results suggest teachers had lower instructional and engagement efficacy during fall 2020. Additionally, there were differences between the instructional types; however, contrary to our predictions, both hybrid and all virtual teachers had lower efficacy than all in-person teachers. We also predicted that teachers with previous accolades (former TOY) would have higher instructional and engagement efficacy scores. To our surprise, there was no difference in instructional or engagement efficacy based on teacher accolades. Lastly, we predicted that teachers who taught in a suburban setting would have significantly higher efficacy scores than teachers teaching in rural or urban settings due to internet and technology access. However, there were no differences based on teacher location.

4. Discussion

The purpose of this study was to explore the impact of returning to teaching during the COVID-19 pandemic on teacher instructional

Table 3
Type of instruction ANOVA.

		Sum of Squares	Df	Mean Square	F	Sig.
Instruction Efficacy	Between Groups	19.907	2	9.954	4.43	.034
	Within Groups	1040.445	358	2.906		
	Total	1060.352	360			
Engagement Efficacy	Between Groups	12.271	2	6.136	3.01	.051
	Within Groups	730.821	358	2.041		
	Total	743.092	360			

Table 4
Teacher Accolades Independent Samples Test.

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Instruction Efficacy	Equal variances assumed	.027	.871	.731	359	.466	.147	.201	-.248	.541
	Equal variances not assumed			.723	181.165	.471	.147	.203	-.254	.547
Engagement Efficacy	Equal variances assumed	2.105	.148	.706	359	.481	.118	.168	-.212	.449
	Equal variances not assumed			.672	167.790	.503	.118	.177	-.230	.467

and engagement efficacy. As one of the first empirical studies focused on the impact of COVID-19 on teacher self-efficacy, the current results suggest teachers had a lower efficacy during fall 2020. When it came to the average of instructional and engagement efficacy, both averages indicated teachers felt they had some influence on instruction and engagement (Tschannen-Moran & Hoy, 2001). In the current study, the average teacher self-efficacy scores for both instructional and engagement efficacy were lower than TSES scores of instruction and engagement in previous studies (Wolters & Daugherty, 2007;). Though we do not know if the difference is significant, we felt it was important to note the current efficacies averaged 1−2 points lower than previous averages. It is also worth noting that previous studies have found teacher self-efficacy scores associated with teaching experience (Hoy & Wollfok, 1993; Wolters & Daugherty, 2007), but in the current study, this was not the case. Thus, leading the researchers to believe that teaching experience does not lead to high teacher self-efficacy during the COVID-19 pandemic. This difference may be due to the COVID-19 teaching requirements and teaching experiences, which are new for all teachers. These new teaching requirements, such as learning to teach virtually, learning new technology, and adapting lesson plans for virtual and hybrid instruction, may impact experienced teachers because they have not had previous mastery experiences teaching virtually or hybrid classes or experiences using the different virtual platforms. Teachers also may have been reassessing their teacher self-efficacy because of the new challenges they faced transitioning instruction to hybrid and virtual formats (Tschannen-Moran et al., 1998) or had a decrease due to an increase in stress and anxiety from teaching during the COVID-19 pandemic (Pressley, 2021; Bandura, 1997).

Compared to other studies completed during the COVID-19 pandemic, the current study found similar results concerning teacher self-efficacy (Pressley, 2021; Dolighan & Owen, 2021; Rabaglietti et al., 2021). The initial studies on teacher self-efficacy during the pandemic indicate many teachers had a decrease in self efficacy, which was also connected to teacher stress (Rabaglietti et al., 2021) and burnout (Pellerone, 2021). When comparing the current results to previous teacher self-efficacy studies, we believe the current study provides a glimpse of how United States teachers felt during one particular time of the year. We urge others to continue exploring the impact of teaching during the COVID-19 pandemic in order to begin to generalize findings.

When examining the differences in teacher self-efficacy scores between teachers, the only significant difference was instruction type. Teachers providing all virtual instruction had the lowest instruction and engagement efficacy, followed by hybrid teachers, and face-to-face with the highest efficacy scores in both instruction and engagement. Again, these findings suggest hybrid and all-virtual teachers had doubts or uncertainty transitioning their instruction online than in-person teachers. The lower efficacy for all-virtual and hybrid teachers may be due to the lack of previous experiences or feedback regarding virtual instruction (Bandura, 1997; Tschannen-Moran et al., 1998). Because this data collection occurred at the beginning of the school year, teachers may not have received feedback on lesson plans or had administrators observe virtual instruction yet. If administrators provide supportive feedback, teacher self-efficacy scores may increase due to verbal persuasion (Fackler & Malmberg, 2016; Bandura, 1986).

Though there were no significant differences between groups of teachers when analyzing the data by instructional level, previous success, and location, which may indicate a majority of teachers struggled with efficacy during fall 2020. When comparing teacher instructional and engagement efficacy based on instructional level, there was no difference between elementary and secondary teachers. This may indicate that all teachers faced similar

Table 5
Teacher location ANOVA.

		Sum of Squares	Df	Mean Square	F	Sig.
Instruction Efficacy	Between Groups	3.441	2	1.720	.580	.561
	Within Groups	1053.596	355	2.968		
	Total	1057.036	357			
Engagement Efficacy	Between Groups	.038	2	.019	.009	.991
	Within Groups	739.061	355	2.082		
	Total	739.099	357			

challenges, which impacted teacher self-efficacy rather than specific grade level challenges. Additionally, there was no significant difference between previous TOY and non-TOY. This result indicates previous success in the classroom did not influence teachers' instructional or engagement efficacy, which indicates that previous TOY did not connect teaching during fall 2020 with previous success in the classroom or previous TOY did not have mastery experiences with instruction provided during COVID-19 (Hoy & Woolfolk, 1993; Wolters & Daugherty, 2007). Similar to Tschannen-Moran and Hoy (2007), when comparing teachers based on location, there were no differences in the groups of teachers, suggesting that no group of teachers had a higher instructional or engagement efficacy than others. These results may suggest that student factors such as internet availability, technology access, and attendance (Simmons, 2020) may not significantly influence teacher instructional and engagement self-efficacy. However, rather other factors such as the instructional approaches or new technologies may influence teacher self-efficacy more.

With schools and districts continuing to provide alternative instructional approaches due to the COVID-19 pandemic, researchers and school administrators need to understand the potential impact on teacher self-efficacy because of the association to other variables such as teacher burnout (Pas et al., 2012; Skaalvik; Song, Wu, & Zhi, 2020; Zee & Koomen, 2016) and student achievement (Anderson et al., 1988; Midgley et al., 1989).

4.1. Implications

As schools and districts look to the future of teaching during COVID-19, teachers need to feel supported with their planning and teaching. Teachers have lower efficacy than previous studies, with teachers teaching in a hybrid or all-virtual model with significantly lower efficacy than all in-person peers. Though the current results do suggest instructional approaches have impacted teachers' self-efficacy, we do not advise sending students back to complete face-to-face instruction until deemed safe according to the medical data and local health officials. Until that time, schools and districts need to develop ways to support teacher self-efficacy, especially for teachers teaching in a hybrid or all virtual setting. The support schools and districts should focus on experiences that will build teacher self-efficacy, such as verbal persuasion, vicarious learning, previous teaching experiences, and monitor teacher physiological state (Bandura, 1986).

District administrators should reexamine the policies put in place for hybrid and all-virtual teachers at the district level. Teachers may feel overwhelmed with new policies requiring teachers to commit more time to develop lessons, administering assessments, and student attendance policies. By providing more flexibility in some of the required policies, districts can provide teachers more autonomy in their lessons and assignments, which may increase teacher self-efficacy as teachers can focus on teaching students rather than balancing multiple district policies. Districts should provide professional development opportunities in areas that teachers are struggling (Yoo, 2016). Districts can survey teachers for specific topics that may be useful to their teaching to support teacher self-efficacy but might focus on specific topics such as engaging students online, developing lesson plans for online instruction, and communicating with parents. To support vicarious learning, a district can have PD run by teachers within the district as an opportunity for teachers to learn from other teachers. Districts can offer PD throughout the school year or over the summer to support teacher's self-efficacy during the year and help teachers prepare for future instruction (Dolighan & Owen, 2021; Kraft et al., 2021; Morris & Usher, 2011; Yoo, 2016). Lastly, districts should explore other variables that may influence teacher's self-efficacy through verbal persuasion and mental state, such as teacher stress, parent communication, and anxiety while teaching during a pandemic (Pressley, 2021; Stipek, 2012; Tschannen-Moran & Hoy, 2007).

At the school level, School administrators should provide feedback on lessons and observations. Administrators need to prioritize feedback early in the school year and continue to provide support throughout the year by providing feedback to support teacher growth and environments that all teachers to ask questions about instruction (Fackler & Malmberg, 2016; Siciliano, 2016; Wolters & Daugherty, 2007). Feedback may especially be critical for hybrid and all-virtual teachers; as Song (2020) found during the COVID-19 pandemic, teachers wanted support with virtual teaching, technology, and developing successful home-school cooperation. Furthermore, school administrators can work with teachers in their building to allow for teachers to observe other teachers who are having success teaching and engaging students in a hybrid or all-virtual model or work with an instructional coach to support instruction (O'Connor & Korr, 1996; Ross & Bruce, 2007).

Additionally, schools can provide teachers time to share lessons and teaching ideas during collaboration sessions (Kraft et al., 2020; Siciliano, 2016). These sessions may include grade-level collaboration but also across the grade-level collaboration. School administrators can also help teachers transfer their previous success teaching in-person to the hybrid and all-virtual models by having instructional coaches or reading/math specialists help teachers connect skills and activities done in person with virtual alternatives (O'Connor & Korr, 1996; Ross & Bruce, 2007). Lastly, school administrators can recognize teachers' hard work and success in implementing lessons in a hybrid or all-virtual setting to help build teacher self-efficacy (Kraft et al., 2021). Recognition might include providing a specific note on an observation or lesson plan or giving grade level shout-outs at faculty meetings for collaboration or engaging lessons as a way of providing verbal persuasion (Bandura, 1997).

Lastly, districts and schools need to monitor teachers' physiological states during the COVID-19 pandemic (Bandura, 1997; Lee & Crunk, 2020; Lee et al., 2020). If schools or districts begin to see high levels of stress or anxiety, administrators might consider providing a mental health day for teachers on a day that students

are not receiving instruction. Though these approaches may be common for schools and districts during a typical school year, the 2020–2021 school year is drastically different, and supporting teacher self-efficacy may not be the first concern at the moment with schools and districts working through growing pains of instruction during the COVID-19 pandemic.

Teachers can also focus on specific aspects at the individual level, which may help raise teacher self-efficacy. To support engagement efficacy, teachers can build in time to develop relationships with students. During a regular school year, teachers focus on building relationships with students throughout the year, but especially during the beginning of the year (Author, 2020; Beaty-O'Ferrall et al., 2015). Teachers should continue to focus on relationship building no matter the instructional set-up. Teachers may have to alter the activities previously done to build relationships due to social-distancing guidelines or virtual format but should prioritize these activities throughout the school year. Furthermore, teachers can set daily and weekly goals for themselves. Setting goals may allow teachers to feel accomplished and may help teachers feel the multitude of tasks required for them is more manageable if broken up throughout the week. Lastly, teachers can reflect on their lessons and make necessary changes throughout the year to encourage student engagement and improve instruction (Author, 2020; Feiman-Nemser, 2003).

4.2. Limitations and future directions

Moving forward, more research needs to focus on the impact of COVID-19 on teachers and schools. Teaching during the COVID-19 pandemic is new and challenging for all educational stakeholders. The current study is one of the first to explore the potential impact on teacher self-efficacy during fall 2020. However, the current study had some limitations that future studies should look to address. First, data collection occurred at one point in time during the fall 2020 academic school year; given the assumption that teacher self-efficacy changes based on experiences, a longitudinal study should examine the changes in efficacy throughout the school year. Also, a longitudinal study would allow researchers to track teacher self-efficacy changes as many districts look to move from all virtual instruction to a hybrid format. It would also be important to note any changes in efficacy if districts moved back to an all-virtual approach due to the spread of COVID-19 during the 2020–2021 school year and into future years. Second, the current study had a limited sample size of teachers. Future studies should include larger sample sizes and include larger and more diverse samples of teachers based on locations, instructional type, and level. Lastly, future studies should include quantitative and qualitative work investigating possible predictor variables for lower efficacy and other variables that may impact teachers during the COVID-19 pandemic.

In conclusion, the current study found teachers had low instructional and engagement efficacy during fall 2020 when returning to teaching during the COVID-19 pandemic. The results suggest all teachers, regardless of instruction type, level, accolades, and location, had lower instructional and engagement efficacy than previous studies (Wolters & Daugherty, 2007; Yoo, 2016). The results also suggested that teachers who are providing all virtual instruction had the lowest instruction and engagement efficacies of the three different instructional approaches. However, the results did not find significant differences in efficacy based on teacher location, previous accolades, or level. Future research should continue to investigate the impact of COVID-19 on teachers as they are essential workers during the COVID-19 pandemic. Schools and districts need to understand the potential impact on teachers as they navigate the challenges of teaching during a pandemic.

References

Anderson, R. N., Greene, M. L., & Loewen, P. S. (1988). *Relationships among teachers' and students' thinking skills, sense of efficacy, and student achievement*. Alberta Journal of Educational Research. Retrieved from http://ajer.synergiesprairies.ca/ajer/index.php/ajer.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman and Company.

Beaty-O'Ferrall, M. E., Green, A., & Hanna, F. (2015). Classroom management strategies for difficult students: Promoting change through relationships. *Middle School Journal, 41*(4), 4–11. https://doi.org/10.1080/00940771.2010.11461726

Dembo, M. H., & Gibson, S. (1985). Teachers' sense of efficacy: An important factor in school improvement. *The Elementary School Journal, 86*(2), 173–184. https://doi.org/10.1086/461441

Dolighan, T., & Owen, M. (2021). Teacher efficacy for online teaching during the COVID-19 pandemic. *Brock Education Journal, 30*(1), 95–116. https://doi.org/10.26522/BROCKED.V30I1.851

Fackler, S., & Malmberg, L. E. (2016). Teachers' self-efficacy in 14 OECD countries: Teacher, student group, school and leadership effects. *Teaching and Teacher Education, 56*, 185–195. https://doi.org/10.1016/j.tate.2016.03.002

Feiman-Nemser, S. (2003). What new teachers need to learn. *Educational Leadership, 60*(8), 25–29. https://doi.org/10.12691/education-4-2A-4

Good, T. L., & Brophy, J. E. (2003). *Looking in the classroom* (9th ed.). Allyn & Bacon.

Hajovsky, D. B., Chesnut, S. R., & Jensen, K. M. (2020). The role of teachers' self-efficacy beliefs in the development of teacher-student relationships. *Journal of School Psychology, 82*, 141–158. https://doi.org/10.1016/j.jsp.2020.09.001

Hoang, A. D., Ta, N. T., Nguyen, Y. C., Hoang, C. K., Nguyen, T. T., Pham, H. H., & Dinh, V. H. (2020). Dataset of ex-pat teachers in Southeast Asia's intention to leave due to the COVID-19 pandemic. *Data in brief, 31*, 1–6. https://doi.org/10.1016/j.dib.2020.105913

Honigsfeld, A., & Nordmeyer, J. (2020). Teacher collaboration during a global pandemic. Educational Leadership [Special report] http://www.ascd.org/publications/educational-leadership/summer20/vol77/num10/Teacher-Collaboration-During-a-Global-Pandemic.aspx, 77, 47, 50.

Hoy, W. K., & Woolfolk, A. E. (1993). Teachers' sense of efficacy and the organizational health of schools. *The Elementary School Journal, 93*(4), 355–372. https://doi.org/10.1086/461729

Kraft, M. A., Simon, N. S., & Lyon, M. A. (2020). *Sustaining a sense of success: The importance of teacher working conditions during the COVID-19 pandemic*. Retrieved from Annenberg Institute at Brown University. https://doi.org/10.26300/35nj-v890. EdWorkingPaper: 20-279.

Künsting, J., Neuber, V., & Lipowsky, F. (2016). Teacher self-efficacy as a long-term predictor of instructional quality in the classroom. *European Journal of Psychology of Education, 31*(3), 299–322. https://doi.org/10.1007/s10212-015-0272-7

Lee, S. A., & Crunk, A. E. (2020). Fear and psychopathology during the COVID-19 crisis: Neuroticism, hypochondriasis, reassurance-seeking, and coronaphobia as fear factors. *Omega: The Journal of Death and Dying*, 1–14. https://doi.org/10.1177/0030222820949350

Lee, S. A., Mathis, A. A., Jobe, M. C., & Pappalardo, E. A. (2020). Clinically significant fear and anxiety of COVID-19: A psychometric examination of the coronavirus anxiety scale. *Psychiatry Research, 290*. https://doi.org/10.1016/j.psychres.2020.113112

Marshall, D. T., Shannon, D. M., & Love, S. M. (2020). How teachers experienced the COVID-19 transition to remote instruction. *Phi Delta Kappan, 102*(3), 46–50.

Morris, D. B., & Usher, E. L. (2011). Developing teaching self-efficacy in research institutions: A study of award-winning professors. *Contemporary Educational Psychology, 36*(3), 232–245. https://doi.org/10.1016/j.cedpsych.2010.10.005

O'Connor, R., & Korr, W. S. (1996). A model for school social work facilitation of teacher self-efficacy and empowerment. *Children and Schools, 18*(1), 45–51. https://doi.org/10.1093/cs/18.1.45

Palmer, D. J., Stough, L. M., Burdenski, T. K., Jr., & Gonzales, M. (2005). Identifying teacher expertise: An examination of researchers' decision making. *Educational Psychologist, 40*(1), 13–25. https://doi.org/10.1207/s15326985ep4001_2

Pas, E. T., Bradshaw, C. P., & Hershfeldt, P. A. (2012). Teacher-and school-level predictors of teacher self-efficacy and burnout: Identifying potential areas for support. *Journal of School Psychology, 50*(1), 129–145. https://doi.org/10.1016/j.jsp.2011.07.003

Pellerone, M. (2021). Self-perceived instructional competence, self-efficacy and burnout during the covid-19 pandemic: A study of a group of Italian school teachers. *European Journal of Investigation in Health, Psychology and Education, 11*(2), 496–512. https://doi.org/10.3390/ejihpe11020035

Pressley, T. (2021). Returning to teaching during COVID-19: An empirical study on elementary teachers' self-efficacy. *Psychology in the Schools, 58*(8), 1611–1623. https://doi.org/10.1002/pits.22528

Pressley, T., Roehrig, A. D., & Turner, J. E. (2018). Elementary teachers' perceptions of a reformed teacher evaluation system. *The Teacher Educator, 53*(1), 21–43. https://doi.org/10.1080/08878730.2017.1391362

Pressley, T. (2021). Factors contributing to teacher burnout during COVID-19. *Educational Researcher, 50*(5), 325–327. https://doi.org/10.3102/0013189X211004138

Rabaglietti, E., Lattke, L. S., Tesauri, B., Settanni, M., & De Lorenzo, A. (2021).

A balancing act during covid-19: Teachers' self-efficacy, perception of stress in the distance learning experience. *Frontiers in Psychology, 12.* https://doi.org/10.3389/fpsyg.2021.644108

Ross, J., & Bruce, C. (2007). Professional development effects on teacher efficacy: Results of randomized field trial. *Journal of Educational Research, 101*(1), 50–60. https://doi.org/10.3200/JOER.101.1.50-60

Ross, J. A., Cousins, J. B., & Gadalla, T. (1996). Within-teacher predictors of teacher self-efficacy. *Teaching and Teacher Education, 12*(4), 385–400. https://doi.org/10.1016/0742-051X(95)00046-M

Siciliano, M. D. (2016). It's the quality not the quantity of ties that matters: Social networks and self-efficacy beliefs. *American Educational Research Journal, 53*(2), 227–262. https://doi.org/10.3102/0002831216629207

Simmons, D. (2020). *Why COVID-19 is our equity check* (Vol. 77, pp. 51–53). Educational Leadership [Special report] http://www.ascd.org/publications/educational_leadership/summer20/vol77/num10/Why_COVID-19_Is_Our_Equity_Check.aspx.

Skaalvik, E. M., & Skaalvik, S. (2007). Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout. *Journal of Educational Psychology, 99*(3), 611–625. https://doi.org/10.1037/0022-0663.99.3.611

Song, H., Wu, J., & Zhi, T. (2020). *Results of survey on online teaching for elementary and secondary schools during COVID-19 prevention and control* (pp. 1–10). ECNU Review of Education.

Stipek, D. (2012). Context matters: Effects of student characteristics and perceived administrative and parental support on teacher self-efficacy. *The Elementary School Journal, 112*(4), 590–606. https://doi.org/10.1086/664489

Tournaki, N., & Podell, D. M. (2005). The impact of student characteristics and teacher self-efficacy on teachers' predictions of student success. *Teaching and Teacher Education, 21*(3), 299–314. https://doi.org/10.1016/j.tate.2005.01.003

Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher self-efficacy: Capturing an elusive construct. *Teaching and Teacher Education, 17*(7), 783–805. https://doi.org/10.3102/00346543068002202

Tschannen-Moran, M., & Hoy, A. W. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and Teacher Education, 23*(6), 944–956. https://doi.org/10.1016/j.tate.2006.05.003

Tschannen-Moran, M., Hoy, A. W., & Hoy, W. K. (1998). Teacher self-efficacy: Its meaning and measure. *Review of Educational Research, 68*(2), 202–248. https://doi.org/10.3102/00346543068002202

Visser, P. S., Krosnick, J. A., & Lavrakas, P. J. (2000). Survey research. In H. T. Reis, & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 223–252). Cambridge University Press.

Vu, C. T., Hoang, A. D., Than, V. Q., Nguyen, M. T., Dinh, V. H., Le, Q. A. T., & Nguyen, Y. C. (2020). Dataset of Vietnamese teachers' perspectives and perceived support during the COVID-19 pandemic. *Data in Brief*, 1–9. https://doi.org/10.1016/j.dib.2020.105788

Wiggins, A. (2020). A brave new world: A teacher's take on surviving distance learning. Educational Leadership [Special report] http://www.ascd.org/publications/educational-leadership/summer20/vol77/num10/A-Brave-New-World@-A-Teacher's-Take-on-Surviving-Distance-Learning.aspx, 77, 41, 38.

Wolters, C. A., & Daugherty, S. G. (2007). Goal structures and teachers' sense of efficacy: Their relation and association to teaching experience and academic level. *Journal of Educational Psychology, 99*(1), 181–193. https://doi.org/10.1037/0022-0663.99.1.181

Yoo, J. H. (2016). The effect of professional development on teacher self-efficacy and teachers' self-analysis of their efficacy change. *Journal of Teacher Education for Sustainability, 18*(1), 84–94. https://doi.org/10.1515/jtes-2016-0007

Zee, M., & Koomen, H. M. (2016). Teacher self-efficacy and its effects on classroom processes, student academic adjustment, and teacher well-being: A synthesis of 40 years of research. *Review of Educational Research, 86*(4), 981–1015. https://doi.org/10.3102/0034654315626801